

IN THE SPECIFICATION:

Please replace the Specification with the following:

FILED OF THE INVENTION

[0001] The present invention relates to a semi-automatic jar opener for opening a threaded cover of a jar of any size, without manually applying torsional force and exerting physical strength.

BACKGROUND INFORMATION

[0002] CA Patent No. 432,070 issued to Gaulin on December 25th 1945 (hereinafter "Gaulin") shows a bottle and jar opener. However, Gaulin's jar opener is not semi-automatic and cannot be used by elders, who may have little or no physical strength, or handicapped persons, who may not be physically capable of using Gaulin's device. Gaulin requires the user to hold the jar or bottle in one of his hands, place the opener on top of the cover with his other hand, and twist his wrist counter-clockwise, manually applying a counter-clockwise torque to loosen and subsequently remove the threaded cover from any bottle or jar.

SUMMARY OF THE INVENTION

[0003] The present invention relates to a semi-automatic opener for a jar closed by a threaded cover. The opener includes:

a first portion including a first body defining a base for receiving the jar thereon;

a second portion including a second body mounted to the first body so as to be superimposed to the first body;

one of the first and second portions having:

 a first turntable rotatably mounted to the respective body between the first and second portions via a rotatable shaft for rotating at least one of the jar and the cover;

 a first toothed rack mounted to the first turntable; the first toothed rack having a first central gear

coaxially mounted to the rotatable shaft and a first pair of rack elements each interlocked to the first central gear for reciprocating movement towards and away each other upon rotation of the first central gear; and
first pair of immobilizing elements for immobilizing the at least one of the jar and the cover; each of the pair of immobilizing elements being secured to a respective rack element of the first toothed rack; and
the other of the first and second portions being provided with second immobilizing elements mounted to the respective body for immobilizing the other of the at least one of the jar and the cover;
whereby, in operation, the jar is positioned onto the base and its cover is immobilized by the second immobilizing elements; the rotatable shaft is then rotated causing the first pair of immobilizing elements to move towards each other until they grip the at least one of the jar and the cover; rotating the shaft then causes a torsional force between the jar and the cover so as to unlock the cover..

[0004] The device enables users, particularly elders and handicapped persons, to unscrew threaded covers of a jar. Thus, one of the benefits of the present invention is that the user is not required to manually exert torsional force to unscrew a threaded cover from a jar. The rotational torque is provided by an electric motor and does not require the application of manual force. Users who may have little or no physical strength, which is a common problem with the elderly, can utilize the present invention and unscrew threaded covers from jars without using physical strength. In addition, the present invention is user-friendly and may be operated by a single hand. Many handicapped users, who may have physical limitations, are also enabled by the present invention to unscrew threaded covers from jars without much difficulty. Furthermore, the present invention does not need to be fixed at a single location and may be moved from one place to another.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] Figure 1 is a top frontal perspective view of an exemplary embodiment of a semi-automatic jar opener according to the present invention;

[0006] Figure 2 is a frontal elevational view of the jar opener illustrated in Figure 1;

[0007] Figure 3 is a top perspective view of a lower part of the jar opener illustrated in Figure 1;

[0008] Figure 4 is a bottom frontal perspective view of a upper part of the jar opener illustrated in Figure 1;

[0009] Figure 5 is a sectional view taken along line 5-5 on Figure 2; and

[0010] Figure 6 is a sectional view of an upper part of the jar opener illustrated in Figure 1.

DETAILED DESCRIPTION

[0011] An automatic jar opener 10 according to an exemplary embodiment of the present invention will now be described with reference to Figures 1 to 6.

[0012] The automatic jar opener 10 comprises a lower portion 12 including a lower turntable 14 rotatably mounted in a first disk-shaped body 16, and lower immobilizing elements 18, operatively coupled to the lower turntable 14 via a first toothed rack 20. The lower turntable 14 is operatively coupled to an electric motor 22 so as to be drivable therefrom.

[0013] The automatic jar opener 10 further comprises an upper portion 24 including an upper turntable 26 rotatably mounted in a second disk-shaped body 28, and upper immobilizing elements 30, operatively coupled to the upper turntable 26 via a second toothed rack 32.

[0014] The second disk-shaped body 28 is movably mounted to the first disk-shaped body preferably via two serrated posts 34 that are secured to the first disk-shaped body 16. The second disk-shaped body 28 includes two diametrically opposite apertures 36 configured, sized and positioned to scoverably receive a respective serrated post 34.

[0015] The upper portion 24 is provided with a horizontal shaft 38 rotatably mounted to the second disk-shaped body 28 so as to be generally parallel to the flat surfaces thereof and as to have its two ends adjacent to a respective serrated post 34. Two gears 40 are mounted to the shaft 38 thereabout and are so positioned along the shaft 38 so as to interlock a respective serrated post 34. Each of the two ends of the shaft 38 is provided with a knob 42. The knobs 42 allow rotating the gears 40 of the horizontal shaft 38 for adjusting the height of the upper portion 24 along the serrated vertical posts 34 and therefore the distance between the upper and lower portions 12 and 24.

[0016] At least one knob 42 may include a radial projection 44 part of a locking mechanism 45 for preventing the rotation of the horizontal shaft 38 and therefore the translation of the upper portion 24 along the serrated posts 34. According to a specific embodiment of the present invention, the locking mechanism 45 further includes a second projection 46 extending tangentially from the second disk 28 adjacent one of the two posts 34 to be engage by the radial projection 44 of the knob 42. Of course, the shaft 38 is axially movable allowing positioning the first and second projections 44-46 for engagement thereof.

[0017] The lower portion 12 will now be described in more detail with reference to Figures 2-5. Each of the two lower immobilizing elements 18, in the form of a pair of jaws, is secured to an enlarged portion of a respective opposite rack element 47 of the toothed racks 20. The rack elements 47 are mounted to the lower turntable 14 for reciprocating towards and away each other. The lower toothed rack 20 further includes a central rotatable gear 48 interlocked with the two rack elements 47 so as to allow transforming the rotational movement of the motor 22 into a translation of the rack elements 47.

[0018] More specifically, the driving shaft 54 of the motor 22 is operatively coupled to central gear 48 via a first coupling gear 50 fixedly secured to a first end of a shaft 51, which is rotatably mounted coaxially within the first disk-shaped hollow body 16 via a low friction cylindrical sleeve 53, and that has its other end secured to the gear 48. The first coupling gear 50 is interlocked with a second coupling gear 52, which is coaxially mounted to the driving shaft 54 of the motor 22. As illustrated in Figure 1, the lower portion 12 of the opener 10 may sit on a hollow cylindrical base 57 that allows both supporting the opener 10 and protecting the motor 22 and first and second coupling gears 50 and 52. A run button 56 connected to the motor 22 is provided to activate and deactivate the motor 22.

[0019] The upper portion 24 will now be described in more detail with reference to Figures 2, 4 and 6. Each of the two upper immobilizing elements 30, in the form of a pair of jaws, is secured to an enlarged portion of a respective opposite rack element 62 of the toothed rack 32. The rack elements 62 are mounted to the upper turntable 26 for reciprocation towards and away each other. The second toothed rack 32 further includes a central gear 64 interlocked with the two rack elements 62 therebetween.

[0020] In operation, the distance between the lower and upper portions 12 and 24 is adjusted to accommodate a jar 59 to open so that the upper turntable 26 contacts the top of the cover 70 of the jar 59. The distance is adjusted by first disengaging the locking mechanism 45 as explained hereinbelow and by rotating at least one of the knobs 42 so as to translate the upper portion 24 along the posts 34.

[0021] Then, activating the motor 22 causes the rotation of the central gear 48 of the lower turntable which in turn causes the rotation in unison of the lower turntable 14, the jar 59 and the upper turntable 26. Since the rotation of the upper turntable 26 causes the closing of the upper jaws 30 on the cover 70 of the jar 59, the rotation of the jar is stopped when the upper jaws 30 grip the cover 70. The jar 59 and the upper portion 24 of the jar opener are then immobilized while the lower jaws 18 move towards the jar 59 since the motor is still energized and the lower

turntable 14 is mounted to the rotating shaft 51. The cover 70 being immobilized, the rotation of the jar 59 results in its opening.

[0022] Friction pads 68 can be provided on the lower and upper turntable 14 and 26 to help stabilize the jar 59 and also contribute to maximize the rotation of the upper turntable 26 in unison with the jar 59 when the upper portion 24 abuts the jar and the jaws 30 are not closed on the cover 70 of the jar 59. Friction pads 66 can also be provided on the jaws 30 for similar purposes. Similarly, the jaws 18 and 30 can be lined with respective friction material 58 and 66 to improve the gripping action on jar 59. Such friction material can be rubber for example.

[0023] It is to be noted that the opener 10 is operable with a single hand and a minimal force is required to execute the above operation.

[0024] As would be understood by one skilled in the art, the gears 50-52 may be rotated manually or electrically such that the movement of the gears increases / decreases the separation between the upper jaws 30. Once the motor 22 has been activated, the lower set of jaws 18 tighten to firmly grip the jar 59 and secure the jar 59 to the center of the platform while the electric motor 22 rotates the lower turntable 14. As the lower turntable 14 rotates, torque is applied to loosen and unscrew the threaded cover 70. It is to be noted that pressure ceases to be exerted on the jaws 18 and 30 as soon as the cover 70 is unlocked.

[0025] The present invention has been described with reference to specific exemplary embodiments thereof. It will, however, be evident that various modifications and changes may be made thereunto without departing from the broadest spirit and scope of the present invention as set forth in the claims that follow. The specification and drawings are accordingly to be regarded in an illustrative rather than restrictive sense.